Contents Volume 30:1 February 2007

Gintis, H. A framework for the unification the behavioral sciences 1

Open Peer Commentary

Ainslie, G. Game theory can build higher mental processes from lower ones 16
Arnhart, L. The behavioral sciences are historical sciences of emergent complexity 18
Bentley, R. A. Social complexity in behavioral models 19
Brown, R. M. & Brown, S. L. Towards uniting the behavioral sciences with a gene-centered approach to altruism 19
Burgess, R. L. & Molenaar, P. C. M. Evolutionary theory and the social sciences 20
Clarke, S. Against the unification of the behavioral sciences 21
Colman, A. M. Love is not enough: Other-regarding preferences cannot explain payoff dominance in game theory 22
Danielson, P. The place of ethics in a unified behavioral science 23
Foss, J. Game theory for reformation of behavioral science based on a mistake 24
Getty, T. In evolutionary games, enlightened self-interests are still ultimately self-interests 25
Glassman, R. B. Diversity, reciprocity, and degrees of unity in wholes, parts, and their scientific representations: System levels 26
Gow, D. W., Jr. Do the cognitive and behavioral sciences need each other? 27
Hammond, K. R. Gintis meets Brunswik – but fails to recognize him 29
Hodgson, G. M. Rationality versus program-based behavior 29
Jones, O. D. Implications for law of a unified behavioral science 30
Kennedy, D. P. Disciplinary stereotypes and reinventing the wheel on culture 31
Krueger, J. I. The flight from reasoning in psychology 32
Markman, A. B. The limitations of unification 33
McCain, R. A. Probabilistic equilibria for evolutionarily stable strategies 34
Mesoudi, A. & Laland, K. N. Extending the behavioral sciences framework: Clarification of methods, predictions, and concepts 36
Noë, R. Selection of human prosocial behavior through partner choice by powerful individuals and institutions 37
Pepper, J. W. Considering cooperation: Empiricism as a foundation for unifying the behavioral sciences 38
Price, M. E., Brown, W. M. & Curry, O. S. The integrative framework for the behavioural sciences has already been discovered, and it is the adaptationist approach 39
Schulte-Mecklenbeck, M. Information processing as one key for a unification? 40
Smith, E. A. More obstacles on the road to unification 41
Stanovich, K. E. The psychology of decision making in a unified behavioral science 41
Tooby, J. & Cosmides, L. Evolutionary psychology, ecological rationality, and the unification of the behavioral sciences 42
Weisfeld, G. E. & LaFreniere, P. Emotions, not just decision-making processes, are critical to an evolutionary model of human behavior 43
Zizzo, D. J. The indeterminacy of the beliefs, preferences, and constraints framework 44

Author's Response

Gintis, H. Unifying the behavioral sciences II 45

Merker, B. Consciousness without a cerebral cortex: A challenge for neuroscience and medicine 63

Open Peer Commentary

Aboitiz, F., López-Calderón, J. & López, V. The mesencephalon as a source of preattentive consciousness 81
Anand, K. J. S. Consciousness, cortical function, and pain perception in nonverbal humans 82
Barceló, F. & Knight, R. T. Theoretical sequelae of a chronic neglect and unawareness of prefrontotectal pathways in the human brain 83
Behrendt, R.-P. The hypthalamo-tectoperiaqueductal system: Unconscious underpinnings of conscious behavior 85
Brusseau, R. R. & Mashour, G. A. Subcortical consciousness: Implications for fetal anesthesia and analgesia 86
Coenen, A. M. L. Consciousness without a cortex, but what kind of consciousness is this? 87

Collerton, D. & Perry, E. Do multiple cortical-subcortical interactions support different aspects of consciousness? 88
Devor, M. Pain, cortex, and consciousness 89
Doesburg, S. M. & Ward, L. M. Corticothalamic necessity, qualia, and consciousness 90
Edelman, D. B. Consciousness without corticocentrism: Beating an evolutionary path 91
Freeman, W. J. Roles of allocortex and centrencephalon in intentionality and consciousness 92
Gardner, R. A. A brain for all seasons 93
Gilissen, E. Cognitive achievements with a miniature brain: The lesson of jumping spiders 94
Glassman, R. B. I Promethean, bound deeply and fluidly among the brain's associative robotic networks 95
Izard, C. Levels of emotion and levels of consciousness 96
Krauzlis, R. J. Target selection, attention, and the superior colliculus 98
Morin, A. Consciousness is more than wakefulness 99
Morsella, E. & Bargh, J. A. Supracortical consciousness: Insights from temporal dynamics, processing-content, and olfaction 100
Northoff, G. Subcortical regions and the self 100
Panksepp, J. Emotional feelings originate below the neocortex: Toward a neurobiology of the soul 101
Piccinini, G. The ontology of creature consciousness: A challenge for philosophy 103
Prescott, T. J. & Humphries, M. D. Who dominates who in the dark basements of the brain? 104
Schlag, J. Should the superficial superior colliculus be part of Merker's meso-diencephalic system? 105
Seth, A. K. The functional utility of consciousness depends on content as well as on state 106
van Honk, J., Morgan, B. E. & Schutter, D. J. L. G. Raw feeling: A model for affective consciousness 107
Watkins, S. & Rees, G. The human superior colliculus: Neither necessary, nor sufficient for consciousness? 108
Watt, D. F. Affirmative-action for the brainstem in the neuroscience of consciousness: The zeitgeist of the brainstem as a "dumb arousal" system 108

Author's Response

Merker, B. Grounding consciousness: The mesodiencephalon as thalamocortical base 110

Contents Volume 30:2 April 2007

R. E. Jung & R. J. Haier. The Parieto-Frontal Integration Theory (P-FIT) of intelligence: Converging neuroimaging evidence **135**

Open Peer Commentary

Blair, C. Inherent limits on the identification of a neural basis for general intelligence 154
Kadosh, R. C., Walsh, V. & Henik, A. Selecting between intelligent options 155
Colom, R. Intelligence? What intelligence? 155
Demetriou, A. & Mouyi, A. A roadmap for integrating the brain with mind maps 156
Hunt, E. P-FIT: A major contribution to theories of intelligence 158
Kirov, R. The sleeping brain, the states of consciousness, and the human intelligence 159
Lee, K. H., Choi, Y. Y. & Gray, J. R. What about the neural basis of crystallized intelligence? 159
Naghavi, H. R. & Nyberg, L. Integrative action in the fronto-parietal network: A cure for a scattered mind 161
Norgate, S. & Richardson, K. On images from correlations 162
Noveck, I. A. & Prado, J. Intelligence and reasoning are not one and the same 163
Nyborg, H. Intelligence, hormones, sex, brain size, and biochemistry: It all needs to have equal causal standing before integration is possible 164
Prabhakaran, V. & Rypma, B. P-FIT and the neuroscience of intelligence: How well does P fit? 166
Rae, C. Piece of mind: a full systems approach is required 167
Roring, R. W., Nandagopal, K. & Ericsson, K. A. Can the Parieto-Frontal Integration Theory be extended to account for individual differences in skilled and expert performance in everyday life? 168
Schmithorst, V. J. Functional connectivity in the brain and human intelligence 169
Sternberg, R. J. Right answer to the wrong question: A reply to Jung and Haier 170
Varley, R. Plasticity in high-order cognition: Evidence of dissociation in aphasia 171
Wilke, M. The neuronal basis of intelligence: A riddle, wrapped in a mystery? 172
Zaidel, D. W. Overall intelligence and localized brain damage 173

Authors' Response

Haier, R. J. & Jung, R. E. Beautiful minds (i.e., brains) and the neural basis of intelligence 174

Dijkerman, H. C. & de Haan, E. H. F. Somatosensory processes subserving perception and action **189**

Open Peer Commentary

Binkofski, F., Reetz, K. & Blangero, A. Tactile agnosia and tactile apraxia: Cross talk between the action and perception streams in anterior intraparietal area 201
Brozzoli, C., Farnè, A. & Rossetti, Y. Divide et impera? Towards integrated multisensory perception and action 202
Christie, T. & Slaughter, V. Early development of body representations 203
de Vignemont, F. How many representations of the body? 204
Drewing, K. & Schneider, W. X. Disentangling functional from structural descriptions, and the coordinating role of attention 205
Fiehler, K., Engel, A. & Rösler, F. Where are somatosensory representations stored and reactivated? 206
Franz, E. A. Considering general organizational principles for dorsal-ventral systems within an action framework 207
Garraghty, P. E. Revisiting parallel and serial processing in the somatosensory system 208
Goodale, M. A. & Cant, J. S. Coming to grips with vision and touch 209
Graf, M. Close coordination between recognition and action: Really two separate streams? 210
Holmes, N. P. & Spence, C. Dissociating body image and body schema with rubber hands 211
Hughes, B. Skin stimulation, objects of perception, and the blind 212
Klatzky, R. L. & Lederman, S. J. Do intention and exploration modulate the pathways to haptic object identification? 213
Leisman, G. & Melillo, R. A call to arms: Somatosensory perception and action 214
Marin, L. & Lagarde, J. The perception-action interaction comes first 215
Maxwell, J. P., Masters, R. S. W. & van der Kamp, J. Taking a conscious look at the body schema 216

Mouras, H. Central role of somatosensory processes in sexual arousal as identified by neuroimaging techniques 217
Reed, C. L. Divisions within the posterior parietal cortex help touch meet vision 218
Sadato, N., Nakashita, S. & Saito, D. N. Pathways of tactile-visual crossmodal interaction for perception 218
Sathian, K., Lacey, S., Gibson, G. & Stilla, R. Multifaceted functional specialization of somatosensory information processing 219
Streri, A. & Sann, C. The multiple relations between vision and touch: Neonatal behavioral evidence and adult neuroimaging data 220
Tessari, A. & Borghi, A. M. Body image and body schema: The shared representation of body image and the role of dynamic body schema in perspective and imitation 221
Travieso, D., Aivar, M. P. & Gomila, A. Haptic perception is a dynamic system of cutaneous, propioceptive, and motor components 222
Vallar, G. A hemispheric asymmetry in somatosensory processing 223

Authors' Response

Dijkerman, H. C. & de Haan, E. H. F. Somatosensory processing subserving perception and action: Dissociations, interactions, and integration 224

Contents Volume 30:3 June 2007

Barbey, A. K. & Sloman, S. A. Base-rate respect: From ecological rationality to dual processes **241**

Open Peer Commentary

Barton, A. Mousavi, S. & Stevens, J. R. A statistical taxonomy and another "chance" for natural frequencies 255

Beaman, C. P. & McCloy, R. From base-rate to cumulative respect 256

Brainerd, C. J. Kissing cousins but not identical twins: The denominator neglect and base-rate respect models 257

Brase, G. L. Omissions, conflations, and false dichotomies: Conceptual and empirical problems with the Barbey & Sloman account 258

Butterworth, B. Why frequencies are natural 259

De Neys, W. Nested sets and base-rate neglect: Two types of reasoning? 260

Evans, J. St. B. T. & Elqayam, S. Dual-processing explains base-rate neglect, but which dual-process theory and how? 261

Fantino, E. & Stolarz-Fantino, S. Enhancing sensitivity to base-rates: Natural frequencies are not enough 262

Gaissmaier, W., Straubinger, N. & Funder, D. C. Ecologically structured information: The power of pictures and other effective data presentations 263

Gigerenzer, G. & Hoffrage, U. The role of representation in Bayesian reasoning: Correcting common misconceptions 264

Girotto, V. & Gonzalez, M. How to elicit sound probabilistic reasoning: Beyond word problems 268

Griffin, D., Koehler, D. J. & Brenner, L. Frequency formats are a small part of the base rate story 268

Keren, G., van Rooij, I. & Schul, Y. One wrong does not justify another: Accepting dual processes by fallacy of false alternatives 269

Kleiter, G. D. Implications of natural sampling in base-rate tasks 270

Lagnado, D. A. & Shanks, D. R. Dual concerns with the dualist approach 271

Laming, D. Ordinary people do not ignore base rates 272

Macchi, L. & Bagassi, M. The underinformative formulation of conditional probability 274

Mandel, D. R. Nested sets theory, full stop: Explaining performance on Bayesian inference tasks without dual-systems assumption 275

Newell, B. & Hayes, B. Naturally nested, but why dual process? 276

Over, D. E. The logic of natural sampling 277

Patterson, R. The versatility and generality of nested set operations 277

Reyna, V. F. & Mills, B. Converging evidence supports fuzzy-trace theory's nested sets hypothesis, but not the frequency hypothesis 278

Samuels, R. Varieties of dual-process theory for probabilistic reasoning 280

Schurr, A. & Erev, I. The effect of base rate, careful analysis, and the distinction between decisions from experience and from description 281

Sun, Y. & Wang, H. Base-rate neglect and coarse probability representation 282

Thomas, J. C. Implications of real-world distributions and the conversation game for studies of human probability judgments 282

Trafimow, D. Why the empirical literature fails to support or disconfirm modular or dual-process models 283

Uhlmann, E. L., Brescoll, V. L. & Pizarro, D. The motivated use and neglect of base rates 284

Whitney, P., Hinson, J. M. & Matthews, A. L. Base-rate respect meets affect neglect 285

Wolfe, C. R. Adaptive redundancy, denominator neglect, and the base-rate fallacy 286

Authors' Response

Barbey, A. K. & Sloman, S. A. Base-rate respect: From statistical formats to cognitive structures 287

Suddendorf, T. & Corballis, M. C. The evolution of foresight: What is mental time travel and is it unique to humans? **299**

Open Peer Commentary

Ainslie, G. Foresight has to pay off in the present moment 313

Atance, C. M. & Meltzoff, A. N. How developmental science contributes to theories of future thinking 314

Bar, M. The continuum of "looking forward," and paradoxical requirements from memory 315

Bischof-Köhler, D. & Bischof, N. Is mental time travel a frame-of-reference issue? 316

Brüne, M. & Brüne-Cohrs, U. The costs of mental time travel 317

Buckner, R. L. Prospection and the brain 318
Carr, V. A. & Viskontas, I. V. A unique role for the hippocampus in recollecting the past and remembering the future 319
D'Argembeau, A. & Van der Linden, M. Emotional aspects of mental time travel 320
Dessalles, J.-L. Storing events to retell them 321
Eacott, M. J. & Easton, A. Mental time travel in the rat: dissociation of recall and familiarity 322
Friedman, W. J. The meaning of "time" in episodic memory and mental time travel 323
Hegdé, J. Mental time travel sickness and a Bayesian remedy 323
Hurford, J. R., Flaherty, M. & Argyropoulos, G. Past and future, human and nonhuman, semantic/procedural and episodic 324
Merker, B. Memory, imagination, and the asymmetry between past and future 325
Mesoudi, A. Has mental time travel really affected human culture? 326
Nelson, K. Developing past and future selves for time travel narratives 327
Okuda, J. Prospection or projection: Neurobiological basis of stimulus-independent mental traveling 328
Osvath, M. & Gärdenfors, P. What are the evolutionary causes of mental time travel? 329
Raby, C., Alexis, D., Dickinson, A. & Clayton, N. Empirical evaluation of mental time travel 330
Schacter, D. L. & Addis, D. R. On the constructive episodic simulation of past and future events 331
Shettleworth, S. J. Studying mental states is not a research program for comparative cognition 332
Sterck, E. H. M. & Dufour, V. First test, then judge future-oriented behaviour in animals 333
Tulving, E. & Kim, A. The medium and the message of mental time travel 334

Authors' Response
Suddendorf, T. & Corballis, M. C. Mental time travel across the disciplines: The future looks bright 335

Contents Volume 30:4 August 2007

Jablonka, E. & Lamb, M. J. Précis of *Evolution in Four Dimensions* **353**

Open Peer Commentary

Blackmore, S. Those dreaded memes: The advantage of memetics over "symbolic inheritance" 365
Brace, C. L. Genetics and the control of evolution 366
Bridgeman, B. One-generation Lamarckism: The role of environment in genetic development 367
Dickins, T. E. & Dickins, B. J. A. Designed calibration: Naturally selected flexibility, not non-genetic inheritance 368
Faulkes, Z. & Davelos Baines, A. Evolutionary string theory 369
Foss, J. Only three dimensions and the mother of invention 370
Gabora, L. Epigenetic and cultural evolution are non-Darwinian 371
Hamame, C. M., Cosmelli, D. & Aboitiz, F. What is so informative about information? 371
Lappan, S. & Choe, J. C. Evolution in the symbolic dimension: The devil is in the details 373
Mesoudi, A. Extended evolutionary theory makes human culture more amenable to evolutionary analysis 374
Sloman, A. & Chappell, J. Computational cognitive epigenetics 375
Steels, L. Is symbolic inheritance similar to genetic inheritance? 376
Warlaumont, A. S. & Dale, R. The missing chapter: The interaction between behavioral and symbolic inheritance 377

Authors' Response

Jablonka, E. & Lamb, M. J. Bridging the gap: The developmental aspects of evolution 378

Ramsey, G., Bastian, M. L. & van Schaik, C. Animal innovation defined and operationalized **393**

Open Peer Commentary

Cachel, S. Novelty transmittal and innovative species 407
Deleporte, P. Behavioral innovation and phylogeography 408
Gajdon, G. K. Knowing psychological disposition might help to find innovation 409
Gardner, R. A. Signs of culture 410
Giraldeau, L.-A., Lefebvre, L. & Morand-Ferron, J. Can a restrictive definition lead to biases and tautologies? 411
Hunt, G. R. & Gray, R. D. Genetic assimilation of behaviour does not eliminate learning and innovation 412
Kendal, R. L., Dean, L. & Laland, K. N. Objectivism should not be a casualty of innovation's operationalization 413
Khalil, E. L. Animal innovation and rationality: Distinguishing productivity from efficiency 414
Locke, J. L. Vocal innovation 415
Logan, C. J. & Pepper, J. W. Social learning is central to innovation, in primates and beyond 416
Madden, J. R. Innovation in sexual display 417
McCall, L. Individual invention versus socio-ecological innovation: Unifying the behavioral and evolutionary sciences 418
Mettke-Hofmann, C. Context-specific neophilia and its consequences for innovations 419
Reader, S. M. Environmentally invoked innovation and cognition 420
Rendell, L., Hoppitt, W. & Kendal, J. Is all learning innovation? 421
Russon, A., Andrews, K. & Huss, B. Innovation and the grain problem 422
Sargeant, B. L. & Mann, J. Defining and detecting innovation: Are cognitive and developmental mechanisms important? 423
Viciana, H. & Claidiere, N. The animal variations: When mechanisms matter in accounting for function 424

Authors' Response

Ramsey, G., Bastian, M. L. & van Schaik, C. On the concept of animal innovation and the challenge of studying innovation in the wild 425

Contents Volume 30:5/6 October/December 2007

Byrne, R. M. J. Précis of *The Rational Imagination: How People Create Alternatives to Reality* 439

Open Peer Commentary

Agassi, J. Imagination and reason 453
Bonnefon, J.-F. Reasons to act and the mental representation of consequentialist aberrations 453
Chandrasekharan, S. & Nersessian, N. J. Counterfactuals in science and engineering 454
Chang, W. & Herrmann, P. What we imagine versus how we imagine, and a problem for explaining counterfactual thoughts with causal ones 455
Church, J. Three steps to rational imagining? 456
Epstude, K. & Roese, N. J. Beyond rationality: Counterfactual thinking and behavior regulation 457
Handley, S. J. & Feeney, A. Semifactual: Byrne's account of even-if 458
Legrenzi, P. The goals of counterfactual possibilities 459
Mandel, D. R. Differential focus in causal and counterfactual thinking: Different possibilities or different functions? 460
Markman, K. D. & McMullen, M. N. Counterfactuals need not be comparative: The case of "As if" 461
Markovits, H. Imagination as a source of rationality in development 462
Riggs, K. J. & Beck, S. R. Thinking developmentally about counterfactual possibilities 463
Sanna, L. J. When imagination is difficult: Metacognitive experiences at the fault lines of reality 464
Shtulman, A. Imagination is only as rational as the purpose to which it is put 465
Spellman, B. A. & Ndiaye, D. G. On the relation between counterfactual and causal reasoning 466
Sternberg, R. J. How rational is the imagination? 467
Van Reet, J., Pinkham, A. M. & Lillard, A. S. The development of the counterfactual imagination 468
Ward, T. B. Is considering true possibilities a truly explanatory principle for imaginative thought? 468
Zeelenberg, M. Emotional consequences of alternatives to reality: Feeling is for doing 469

Author's Response:

Byrne, R. The rational imagination and other possibilities 470

Block, N. Consciousness, accessibility, and the mesh between psychology and neuroscience 481

Open Peer Commentary:

Balog, K. Access to phenomenality: A necessary condition of phenomenality? 499
Burge, T. Psychology supports independence of phenomenal consciousness 500
Byrne, A., Hilbert, D. R. & Siegel, S. Do we see more than we can access? 501
Clark, A. & Kiverstein, J. Experience and agency: Slipping the mesh 502
Gopnik, A. Why babies are more conscious than we are 503
Grush, R. A plug for generic phenomenology 504
Harman, G. What is cognitively accessed? 505
Hulme, O. J. & Whiteley, L. The "mesh" as evidence – model comparison and alternative interpretations of feedback 505
Izard, C. E., Quinn, P. C. & Most, S. B. Many ways to awareness: A developmental perspective on cognitive access 506
Jacob, P. What is "cognitive accessibility" accessibility to? 508
Kentridge, R. W. Incomplete stimulus representations and the loss of cognitive access in cerebral achromatopsia 508
Koch, C. & Tsuchiya, N. Phenomenology without conscious access is a form of consciousness without top-down attention 509
Kouider, S., de Gardelle, V. & Dupoux, E. Partial awareness and the illusion of phenomenal consciousness 510
Lamme, V. A. F. Sue Ned Block!: Making a better case for P-consciousness 511
Landman, R. & Sligte, I. G. Can we equate iconic memory with visual awareness? 512
Lau, H. & Persaud, N. Broken telephone in the brain: The need for metacognitive measures 513
Levine, J. Two kinds of access 514
Lycan, W. G. Phenomenality without access? 515
Malach, R. The measurement problem in consciousness research 516
McDermott, D. Dodging the explanatory gap – or bridging it 518

Naccache, L. & Dehaene, S. Reportability and illusions of phenomenality in the light of the global neuronal workspace model 518
O'Regan, J. K. & Myin, E. Phenomenal consciousness lite: No thanks! 520
Papineau, D. Reuniting (scene) phenomenology with (scene) access 521
Prinz, J. Accessed, accessible, and inaccessible: Where to draw the phenomenal line 521
Rosenthal, D. M. Phenomenological overflow and cognitive access 522
Sergent, C. & Rees, G. Conscious access overflows overt report 523
Shanahan, M. & Baars, B. Global workspace theory emerges unscathed 524
Snodgrass, M. & Lepisto, S. A. Access for what? Reflective consciousness 525
Spener, M. Expecting phenomenology 526
Tye, M. Phenomenal consciousness and cognitive accessibility 527
Van Gulick, R. What if phenomenal consciousness admits of degrees? 528
Vanhudenhuyse, A., Bruno, M.-A., Brédart, S., Plenevaux, A. & Laureys, S. The challenge of disentangling reportability and phenomenal consciousness in post-comatose states 529

Author's Response:
Block, N. Overflow, access, and attention 530